

1.4 Variable winter climates and precipitation patterns

In Southern Ontario we enjoy a seasonal climate, with distinct summers and winters but as temperatures rise these seasons have become and may become even less distinct. As temperatures rise and precipitation patterns change our winters are projected to become warmer and rainier, bringing about potentially hazardous environmental and personal wellness concerns.

Typically in Southern Ontario we experience a single spring melt, and the majority of the winter snow accumulation melts. During this period rivers, creeks, channels and storm water systems are at capacity, and if overwhelmed can cause potentially dangerous situations. Lately it has been observed that with the more variable temperatures, spring melt is not necessarily happening all at once and not necessarily happening only in the spring.

On the brighter side of climate change, if there isn't one major snow melt there will be less of health and safety concern around creeks and channels, since water will not be moving as vigorously through the creeks and channels. Always remain careful and refer to [Conservation Halton's Flood Status website](#) for flood warnings.

Melting and freezing of water is known to cause ice jams which can cause flooding of creeks, channels and storm water systems which presents risks to health and safety and can result in property loss, environmental damage, insurance claims, costly repairs and maintenance. Warmer winters and variable temperatures make winter activities even more unpredictable and dangerous.

Storm water infrastructure, including both ponds and pipes, are built to handle, transport and filter storm water to prevent flooding. It is always advisable to stay a safe distance away from the bank of any water body, especially after a heavy rainfall or during snow melt conditions.

Recreational use of storm water ponds is not permitted and winter skating and other recreational uses can impact their ability to function properly and can pose safety risks as this is not their intended purpose.

WHAT ARE STORMWATER MANAGEMENT PONDS? Stormwater management ponds are designed to protect our natural streams and waterways against flooding and erosion. They collect stormwater from the local storm sewer system, provide treatment to trap pollutants, and then slowly release the treated water back into our waterways.

STAY SAFE - For your safety, the following are **NOT** permitted on stormwater management ponds:

- no skating
- no swimming or wading
- no boating
- no fishing or fish stocking

PROTECT OUR WATER BODIES

- Please do not dump brush, grass clippings, garbage or household waste (including oil, soap scum and fertilizers) into storm sewers, stormwater management ponds or creeks. Do not direct pool drainage into adjacent streams or valley lands.

For more information, visit www.oakville.ca or call 905.845.6601, ext. 3889

Freezing Rain and Ice Storms

As mentioned in Section 1.3, the increase in precipitation is annual and will impact all 4 seasons especially winter. Increased annual temperatures will cause warmer winters resulting in winter precipitation in the form of ice, sleet and freezing rain rather than snow. Experts predict that lake-effect snow will increase in the short to medium term as lake temperatures rise and winter temperatures are still cool enough to produce snow. However, by the end of the 21st century, snowfall will likely be replaced by heavy lake-effect rain events due to the higher temperatures.



Courtesy of Oakvillenews.ca

The Town of Oakville, along with several other municipalities, faced the 2013 Ice Storm which had devastating impacts on urban forests – downing trees and limbs, human health – stress, unprepared homesteads, vulnerable populations, electrical distribution – 45 000 of Oakville Hydro’s 65000 customers experienced power outages and transportation systems – dangerous road and driving conditions.

Mayor Rob Burton relates, “this ice storm was the most significant storm experienced by the town in the last 35 years.”

Building your resiliency

- Visit the town’s [Emergency Preparedness webpages](#) to find out what to do before, during and after an extreme weather event. Attend the town’s Keep Calm and Adapt – Emergency and Extreme Weather Preparedness event taking place each May.
- Ensure your home and car are equipped with an emergency preparedness kit. Refer to Appendix d for examples of items to include.
- Print off [Halton Region’s Personal Emergency Preparedness Guide](#) and keep it on hand for emergency situations.
- Always check the [Weather Network](#) for current and predicted weather conditions before heading out.
- Keep deicers on hand to maintain your driveways, sidewalks and pathways. Instead of salt, check for ‘eco’ products that are safe for pets, wildlife and the environment.
- It is always recommended to stay indoors when poor and dangerous conditions are predicted. If you absolutely need to venture out in poor weather there are a few actions noted below that can help you through it.

On the road:

- Take public transit instead of driving if you must leave the house.
- Register for a winter driving course – contact [Young Drivers of Canada](#) to find one near you.
- Ensure your vehicle is properly maintained, including fluid top-ups, tire inflation and the installation of winter tires.

Building the town's resiliency

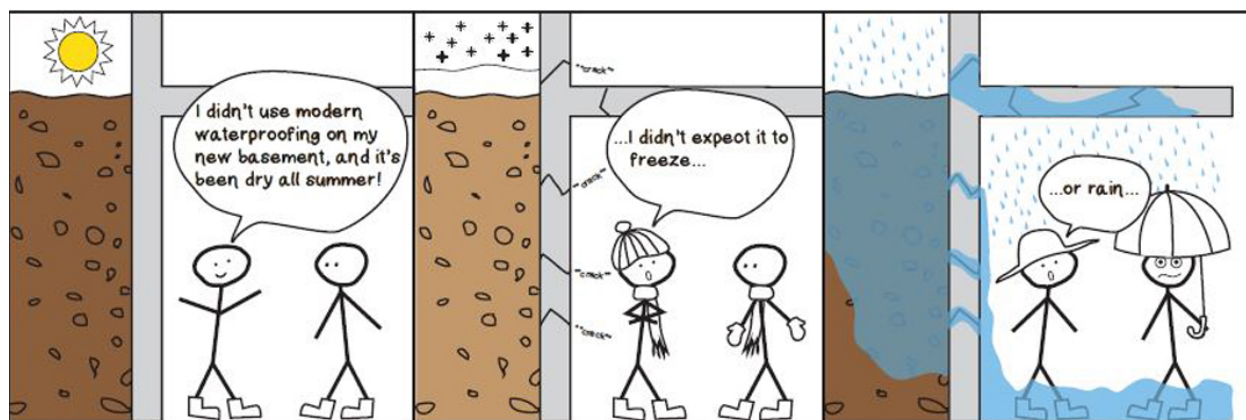
- Refer to the themes: Natural Environment and Biodiversity, Health and Wellness and Built Environment in the Climate Change Strategy.

Increased freeze/thaw cycles

Warmer more variable temperatures will increase the number of freeze thaw cycles that occur annually. Freeze thaw cycles can take a toll on the built environment in several ways including foundation cracks, increased potholes on roadways and burst water pipes.

Repeated freeze thaw action on concrete and asphalt materials can cause stress cracks and fractures and eventually compromise the safety and performance of that structure. When concrete is saturated with water and then frozen, there is not enough room for the water to expand into ice and therefore the concrete fails.

Driveways, sidewalks, the foundation of houses, and public infrastructure such as bridges and roads will all experience greater stress as freeze thaw cycles increase.



FACT: Freeze/Thaw cycles cause concrete deterioration when the concrete has not been properly waterproofed, and as a result becomes saturated with moisture. Concrete deterioration from freeze/thaw cycles causes millions of dollars in damage every year. <http://blog.kryton.com/2013/11/freezethaw-cycles-can-lead-to-concrete-deterioration-stickman-fact-2/#sthash.MlqFXMWn.dpuf>

Building your resiliency

- Check your foundation for cracks or dampness. Spring is a good time to check as the concrete has been through a winter/early spring freeze thaw cycle which is known to make existing fractures worse or cause new ones.
- Slope your eavestrough's downspouts away from your house to avoid the melt water from your roof draining close to the foundation.

- Visit [Halton Region's webpage](#) on frozen water pipes to learn why pipes freeze, who is responsible for water service lines, how to reduce your risk of frozen pipes and what to do when you are without water.
- Report roadway and sidewalk fractures to ServiceOakville by dialing 311.

Building the town's resiliency

- Refer to the theme: Built Environment in the town's Climate Change Strategy.